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DEVOTED TO PHOTOGRAPHY IN ITS
WIDEST SENSE

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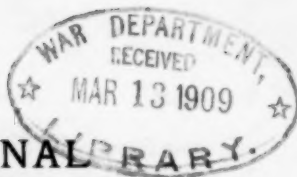
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PHOTOGRAPHING CLOUDS.

JOHN BARTLETT.

ROCKS, trees, mountains, plains and waters are the features of landscape, but its expression is from above, and it is not a new figure of speech to say nature smiles or weeps, is tranquil, sad, or disturbed with rage, for such she seems as the atmosphere affects her. Hence the sky is of paramount importance in landscape painting or photography,—an importance which is not diminished even when it forms but a small portion of the composition.

“There is not a moment of any day of our lives,” says Mr. Ruskin, “when Nature is not producing scene after scene, picture after picture, glory after glory, and working still upon such exquisite and constant principles of the most perfect beauty, that it is quite certain it is all done for us, and intended for our perpetual pleasure. And every man, wherever placed, however far from other sources of interest or of beauty, has this done for him constantly. The noblest scenes of the earth can be seen and known but by a few; it is not intended that man should live always in the midst of them; he injures them by his presence, he ceases to feel them if he is always with them; but the sky is for all; bright as it is, it is not

“‘Too bright nor good
For human nature’s daily food’;

it is fitted in all its functions for the perpetual comfort and exalting of the heart, for soothing it and purifying it from its dross and dust."

And yet many landscape painters, if we judge from their studies of nature, seem as if they had never raised their eyes above the horizon.

Turner's transcendent power of expressing atmospheric phenomena has silenced critics who cavil at some of his eccentricities.

Constable, whose delightful landscapes bring us near to nature's heart, tells us in a letter to a friend :

"I have done a good deal of skying, for I am determined to conquer all difficulties, and that among the rest. The landscape painter who does not make his sky a very material part of his composition neglects to avail himself of one of his greatest aids. If the sky in a painting is obtrusive it is bad, but if it is evaded altogether it is coarse. It must and always should be an effectual part of the composition."

It will be difficult to name a class of landscape in which the sky is not the key-note, the standard of scale, and the chief organ of sentiment. The sky is the source of light in nature, and governs everything; even our common observations on the weather of every day are altogether suggested by it.

The difficulty of skies in painting is very great, both as to composition and execution, and the difficulty is considerable also in photography, which I suppose is the reason they are so often neglected in landscape to the great injury of the composition. But the difficulties are not insurmountable, and it is possible to depict with the appliances of modern photography some of that constant play of exhaustless energy, evolving from its bosom form after form of loveliness,—fleecy masses of wind-fretted clouds, soft filaments of fine-spun vapor, interpenetrated with changing lights, multitudes of dense white shapes wandering in thick flocks,

"Shepherded by the slow, unwilling wind."

The primal cause of the failure to secure these transient shapes of beauty is the great intensity of the light of the sky compared

with the amount of illumination of the general landscape, or even of water. In a photograph the sky is often not as bright as the water or other high-lights. To speak photographically, it is literally burned out. For the amount of exposure necessary to secure the landscape vastly overtimes the sky.

If only enough exposure be given to secure the sky the landscape is veiled in deep night, as the sky has the appearance of a moonlight expanse without any corresponding illumination of the scene as in a real moonlight view.

It is for this reason that various devices have been suggested to give the minimum amount of exposure to the sky and the maximum to the landscape, such as sky screens, shutters, etc., but these hardly better the condition of things, and recourse is generally had to the printing in of clouds from another negative, not always in harmony with the view, frequently illuminated in a different direction, and once in a while even upside down.

When films came into use the writer hailed them as an effectual solution of the problem, and did secure some good results by exposing a film instantaneously with a small stop in the lens for the cloud effect, and on the same scene another film or plate for the landscape, to which more time was given,—one side of the double holder containing the sky-plate, the other the view-plate. The sky negative could thus be used for double printing.

This method required much care and attention at the time of exposure, and subsequent care and attention both in development and printing. Besides, even the films did not always secure the sky effect.

To get the best results in skying we must take into consideration the nature of the sky subject, and study it both as to the method of exposure and the mode of development to be applied. Clouds, by which we really mean the sky in photography, are divided into certain orders: cumulus, cirrus, stratus, etc., and combinations, each demanding a special treatment.

If we apply the method for cumulus to cirrus we get nothing for our pains.

Cumulus does not require very special handling. An ordinary plate of the slow variety is preferred. Short exposure and a bro-

vide developer will generally give us a counterfeit presentment of the heavenly countenance.

Some attention must also be paid to the character of the lens, according to the amount of sky we wish to take in. If considerable of heaven's canopy is desired, select a wide-angle of course, but if we wish a single great luminous mass of wool-like vapor, "the lazy, pacing clouds," a lens of longer focus comes into play.

Stop down the lens, for even in conjunction with the most rapid shutter there is great danger of over-exposure. Even the storm cloud, though it looks dark to us, almost black sometimes, is surcharged with light which is constantly radiating from it, and a very quick exposure is sufficient.

The most difficult clouds to secure are the feathery cirrus, and those forms we call mare's-tails. The trouble is caused by the bright blue of the sky operating as powerfully as the clouds themselves, giving no contrast in the picture.

If our skies were constantly red or green, which thank God they are not, the securing of the fleecy veil would be easy enough. It has been suggested, and, I believe, tried, to make use of a Nicol prism, for, as you know, the blue of the sky is polarized light. The prism is placed in proper position before the lens, and we have what we desire, white cloud upon a black ground. But Nicol prisms are expensive. Cloud prospects have also been photographed successfully by placing a dark mirror in front of the lens at the angle of polarization, and taking the view reflected therein.

But these plans are not sufficiently simple, or the apparatus always accessible, and recourse is had to other methods which recommend themselves by their simplicity.

I hear several voices at once, "How about orthochromatic plates?" Possess yourselves in patience, dear readers; I am coming to that plan at a leap.

Take a plate stained with erythrosin, which is specially sensitive to the yellow-green rays, and expose through a proper filter, and we have the conditions presented to the plate by the light which passes through the lens and filter as if the clouds were on a dark ground.

Dr. R. Neuhauss, in an excellent monograph on cloud photography, published in Germany, gives the following formula for making erythrosin plates :

STOCK SOLUTION OF ERYTHROSIN.

Erythrosin, - - - - -	15 grs.
Alcohol (95 per cent), - - - - -	1 ½ ozs.

For use take 3 ½ ounces of distilled water and ¾ dram of stock solution of erythrosin, and filter it to remove any dust particles. The plate is bathed in this for a minute, rocked in two directions so as to insure uniformity, placed to drain on clean absorbent paper for ten minutes, and then dried in dark-room.

The plate is exposed through a yellow screen placed at the back of the lens. Dr. Neuhauss recommends the chromate of copper, which completely excludes the blue and violet rays. It is made as follows :

Take Sulphate of copper, - - -	678 grains.
Bi-chromate of potassa, - - -	66 grains.
Sulphuric acid, - - - - -	8 drops.
Water, - - - - -	8 to 16 ounces.

This fluid, which is of greater or less density according to the amount of water employed, is placed in a glass cell composed of two pieces of plate glass and introduced behind the lens. If placed in front of the lens the focusing must be done through it or the image will be blurred on the plate.

The lightest cirrus can be secured by this means, but the time of exposure is of course longer than when photographing cumulus, by reason of the dark color of the absorbing filter. Any of the developers can be employed, but in order to secure proper contrast recourse must be had to slow development, with plenty of bromide as restrainer.

Attention is sometimes needed to the position of the camera when the cloud masses or single great clouds are towards the zenith rather than the horizon. Arrangements should be made to tilt the instrument almost vertically, for frequently splendid forms are presented directly overhead.

The extreme distance of some cloud varieties is often deceptive. To the eye they appear much larger in form than they look when

focused on the ground glass. Of course we must change the objective to render them larger. Indeed, it is strange that photography is not made more use of as a scientific adjunct for meteorological observation of the great variety of cloud forms. The present classification based on ordinary observation is very defective. The engravings in the books from hand-drawings are imperfect, and exhibit but a few of the forms of nature.

There are many varieties which cannot be arranged under the present systems, especially the cloud forms presented at night, and the changes which so rapidly take place in all forms. These could all be secured and tabulated. The peculiar varieties at night, when the illumination is comparatively weak, of course necessitate quick lens and longer exposures, sometimes as much as a minute. Trouble is experienced in focusing on the night clouds, but may be overcome by striking a fixed focus by daylight on a point of farthest remove. The sky being black at night an ordinary plate can be used, and the diaphragm should not be too small. If we know the focal length of our lens the camera may be used to determine the angular distance and magnitude of the clouds, and the rate of movement estimated by fixed lines on the ground glass; but as there are very accurate scientific instruments for this purpose we only mention it as a hint to amateurs who take some delight in meteorological phenomena.

There are beautiful celestial phenomena not yet made tributary to art by photography,—for instance, the Aurora-borealis. The rainbow has frequently been photographed with our orthochromatic aids, but there is a beautiful appearance in calm weather, when large masses of bright clouds are reflected in broad columns of light on the sea, just as the sun throws his pillars of fire below him. This is a constant appearance in nature, and familiar to almost everybody, but even the painters have ignored it.

We go on painting and photographing the things which others and ourselves have painted or photographed before us, and do not look off from our beaten road as often as we should to the beauties lavished about us.

We are too easily contented to rest with what has been done, to have

" Art ever the same,
And keep invention in a noted weed."

We have said much, and laudably grown enthusiastic, over clouds and cloud effects; but sometimes in a photograph a plain sky is preferable. Certain subjects, few it is true, are bettered by its omission. It becomes too obtrusive, especially in the smaller sizes, and detracts from the interest of the subject. I cannot, just now, think of any other class than architectural studies. As a class, particularly where the structure is relatively large with respect to the picture, clouds would be "more honored in the breach than in the observance."

Some of our superb views of the capitol at Washington are grand in the total absence of clouds, and would be greatly marred, in my opinion, by their introduction. The majestic lines of beautiful architecture are sufficient to delight the eye in themselves, and the imposing masses of light and shade are restful, and cloud masses would only be like a disturbing note in the harmony.

But take a view in which the architecture is only a minor feature,—this capitol view, if you will, forming only a part of the panorama of the city of Washington,—and the judicious introduction of clouds might save it from tameness or monotony.

In conclusion,—for we must stop somewhere, notwithstanding the temptation to talk about what glorious results can be obtained at sunset or when the sun is just off the lens, or even when it is shining right in it from behind the clouds, so it does not fog the plate,—some of the finest effects are had by interposing the sail of a boat between the sun and the camera. The play of light upon the water, and the varied forms of the vessels, together with the reflections and the strong effect of dark against light, make some of the most striking artistic groupings produced by photography. It is not always best to follow the old maxim of photographers to keep the light to your back. But in conclusion again, if you make cloud negatives for future use in printing or upon other landscape negatives, first, keep your cloud negative thin, so that it will print quickly, but still have enough contrast to render it effective; second, do not, as many photographers do, attach cloud masses taken with an almost vertical sun, to a scene in

which the lengthy shadows betoken either evening or early morning. I have seen beautiful marine scenes made absurd by the introduction of land-clouds which nature never distributes in marine regions, and some beautiful Egyptian photographs made geographically incorrect by heavy masses of cumulus wrapping their vapory mantle about the Pyramids of Gizeh and the Temple of Aboo Simbul, by some enthusiastic cloud printer, who sought to improve the negatives.

THE TOTAL ECLIPSE OF AUGUST 9TH, 1896.

BY E. WALTER MAUNDER, F.R.A.S.

IT is difficult to write a satisfactory account of an eclipse expedition to which a sight of the eclipse has not been vouchsafed, and as all the world now knows, that has been our fate at Vadsö.

Nevertheless, there is a story to tell, though but a meagre one compared with that for which we had hoped. The various preparations for drawing and photographing the corona and for photographing the spectrum were necessarily of no avail, and it would appear useless to recount again the details of programmes which the weather defeated. Something, however, was done. The general spectacle of the eclipse was watched with sedulous care by scores of observers, most of whom, under more fortunate circumstances, would have had their whole attention fixed upon their instruments; so, though thick clouds concealed the sun almost without a break for the whole period of the eclipse, yet the weird effects of the gradual darkening were watched with great minuteness. The edge of the shadow was distinctly seen by several observers as it swept upwards from the south, some observing it on the clouds, others on the hills and fjord. The shadow appeared to travel from the south, not from the west—the direction in which the track of totality really lay—this effect being due to the oval shape of the shadow itself, and the fact that the central line was south of Vadsö, where the observers

were stationed. With the sweep of the shadow across the country there came a distinct increase in the darkness, an increase so distinct that it was possible to assert with great confidence that the predicted time of the commencement of totality, as given by the *Nautical Almanack*, is quite four seconds too late; the duration would appear to be practically correct, as the return of light, more sudden and more easily marked, in the opinion of nearly every observer, than the accession of darkness, took place about three seconds before the tabular time.

Regarded from the point of view of actual amount of illumination the darkness was not excessive; it was probably less than in any recent eclipse, less even than it would have been had the sky been clear. It was perfectly easy to read the second hand of a watch even at mid-eclipse, distant objects were still retained in sight, and the surrounding features of the country did not entirely lose their color. The total light did not probably differ very much from that of a bright night at the full of the moon, but the impression produced was of a totally different character. Instead of the cold but cheerful light of the moon—a light felt to be beautiful and helpful—the light of the eclipse could only be regarded as darkness, a terrible darkness, darkness made visible, darkness that might be felt.

It is not possible to explain exactly the cause of this feeling, one which the most stolid and the most cynical were alike obliged to confess to. Possibly the speed with which it came on, continually and inexorably increasing without any obvious cause, had something to do with it. Possibly it may have been rather due to the strange coloring of earth and sky, for, above, the heavy clouds which almost entirely covered the heavens were dyed a deep purplish black; below, the dark rocks took a hue as sombre and deep, though perhaps of a more bluish tone; whilst in the few narrow rifts, especially immediately below the sun, in the east and away between dips in the hills to the north-west and south, a bright amber light appeared. It was as if a funeral pall with a golden fringe had been laid upon the face of nature.

The effect of the darkness upon men and animals was the same as has been so frequently noticed in other eclipses wherein the sky has actually been clear. The birds flew home straight and low and with shrill cries of terror as the gloom deepened. The goats on the island of Vadsö, where the British Astronomical Association were encamped, whose restless curiosity had made them a sad plague to the party during the previous week, hid themselves in the hollows of the rocks and lay down to rest, and all conversation amongst the large crowd of onlookers entirely ceased. Even a little band of obstreperous Germans from the *Erling Jarl*, who had made themselves offensive by their disorderly conduct before the eclipse began, were awed into silence, and the most profound stillness prevailed until the return of light.

No stars were seen in any of the small breaks which the clouds afforded. Indeed, these looked far too bright for any such to have been seen.

Nothing is more difficult than to give such a description of the appearance of the light during totality as to enable those who have not seen an eclipse to realize it. One observer speaks of "sea, sky, and hills all becoming an intense livid blue"; others preferred to call it the "deepest indigo purple" they had ever witnessed; others again differentiated between the tone of cloud and land, and spoke of the former as being of a "cold dark-grey black," whilst the hills retained in their blackness some tinge of blue or purple. But there was a general opinion that the colors of the amber and ruddy rifts were not only like "sunset colors," but had identically the same origin. Mr. Green urges that the golden light so conspicuous at sunset is always present at its proper low altitude in the sky; it is only that it becomes more conspicuous when the daylight fades as the sun sinks below the horizon. On this hypothesis there is no need for wonder that the amber and ruddy tints seen in the low-lying rifts appeared so vivid. This would naturally follow as an effect of contrast with the dark masses of cloud and rock above and below them.

And now for the lessons of the eclipse, for though we were

not fortunate enough to see it, our experiences have their lessons.

First of all, the fact that a magnificent view was afforded at Bodo, where the small altitude of the sun rendered success so unlikely, whilst at Vadsø and at Bugonæs, where the chances seemed reasonably good, the eclipse was hidden by clouds, reinforces and drives home the lesson taught by a dozen previous eclipses, that no accessible station whatsoever must be left unoccupied; and that those who are sufficiently self-denying as to adopt a location apparently hopeless, may, in spite of meteorological reports, carry off the prize even before those who have stationed themselves where all seemed promising.

Another lesson, not less important, is that of the value and necessity of drill. The work accomplished by Prof. Lockyer and his assistants at Syd Varanger was most remarkable, and calls for very full recognition. The organization of practically an entire ship's company as an observing staff, and their training into a state of thorough preparedness, was a most remarkable achievement.

If Mr. Lockyer's achievement was surpassed, then I think the British Astronomical Association may lay claim to that merit. In many ways the task before the officers of the Association was a far heavier one than that before Prof. Lockyer. The number of observers to be brought into line was considerably larger, and these were not naval officers well accustomed to strict discipline and exact obedience, but independent ladies and gentlemen out on a holiday excursion. Nevertheless the task was accomplished. The observers were organized, trained, and exercised, and on the morning of the eclipse each was in his or her appointed place, knowing what to do, and confident, from the rehearsals that had taken place, as to their ability to accomplish it. That this was possible was due, first, to the unsparing earnestness of those undertaking the work of organization—Dr. Downing, Messrs. Crommelin, Evershed, Green, and Lunt Wesley, and the Rev. J. Cairns Mitchell—and, next, and not less, to the most cheerful and ready co-operation and help, not only of those who had come out expressly as observers in connection with the British Astronomical Association, but also

those who had come merely to make a holiday, and to see an unwonted spectacle.

Lastly, I think that it is clear that the equatorial in its ordinary form will be less and less the eclipse instrument of the future. In some cases the most convenient device will be that adopted by Prof. Schaeberle, in 1893, and by Dr. Copeland on the present occasion, of a fixed telescope and a traveling plate, the motion of the plate being regulated to compensate for the motion of the sun. In many respects, a better way of getting over the difficulties of a fixed telescope is by the use of an auxiliary mirror, mounted in one of several ways. The ordinary heliostat has the drawback that is not suitable for any but very short exposures, on account of the apparent revolution of the image. The double heliostat overcomes this difficulty, but at the cost of a second deflection. The polar heliostat requires the telescope to be parallel to the polar axis, often a very inconvenient arrangement. On the whole, the *cœlostatic* method, employed for the first time in this eclipse, appears to offer great possibilities, and will probably obtain greater favor as time goes on.

For those, however, who have only small instruments at their disposal, and especially cameras in which the focal length is small and the aperture relatively large, there can be no doubt that the best plan, in default of the assistance of a *cœlostat* or its equivalent, will be to fix the instrument rigidly pointing to the sun, to dismiss all idea of following, and to limit the exposures, so that the blurring due to the apparent motion of the sun would not be appreciable in the time.

The above remarks apply, of course, only to photographs of the corona itself. The inner portions of the corona are so bright, and the best modern plates so sensitive, that an exposure practically instantaneous is sufficient to obtain a good record. The experience of former eclipses shows that the tendency has been distinctly to over-expose—even with the less rapid plates formerly available—and, indeed, save under the most exceptional conditions of sky, a limit is soon reached in which further exposure, instead of bringing up more coronal features, only

brings up the general sky illumination. It has become, therefore, clear that short exposures must be the rule, and, if short, there is the natural desire to obtain as large a number of these as possible. The crucial question then becomes, how to obtain the greatest possible number of exposures without, in the process of changing plates, setting up such tremors as will destroy all definition. To effect this it is of first necessity that the telescope itself be as stable as possible, and this can be far better secured where it is immovably fixed than where it is equatorially mounted and driven by clockwork.

As to the method of changing plates, there seems little advantage in one over another. Perhaps the method which promises best is that of a separate dark slide for each plate, the dark slide being made to rest on the end of the camera, not to fit into a tight groove—to be held in its place by an easily moved spring, and the shutter of the slide to open door fashion. The changes in this case will probably be made as quickly, if not more so, than by any arrangement of changing boxes, revolving drums, or long continuous slides; it will be much less weighty, less liable to jar, and free from all possibility of sticking at a critical moment.

For spectroscopic work, the conditions are quite different, and vary with the different departments of work to be attempted. Here the equatorial may still hold its ground, though the balance of convenience will be greatly on the side of the cœlostæt.

Lastly, the one great lesson which the disappointment of Vadsø seems to enforce upon all those who suffered from it was to leave no stone unturned to secure that they should take part in the observation of the next solar eclipse, that visible in India in January, 1898, whence, so far as mortal can foresee, there will be little or no fear of the untoward weather that baffled our efforts in Finmark.—*Knowledge*.

Lawyers and doctors charge for their opinions, and photographers for their views of things.

LATEST DEVELOPMENTS OF ROENTGEN'S
DISCOVERY.

DR. EDWARD J. HOUSTON delivered an instructive lecture on Roentgen's discovery at the Franklin Institute, in which he gave the latest views of the eminent physicists who have given the matter careful study. It was not to be expected, he said, that scientists would arrive at the same conclusions on a subject of this kind in the short period of eleven months since Roentgen first gave his discovery to the world. Some of the earlier conjectures have, however, been definitely disproven, but the term X, or unknown, rays, which Roentgen himself gave to them, still accurately describes them. They remain unknown.

Dr. Houston remarked that the intense excitement caused by Roentgen's announcement had been paralleled by similar discoveries in the last century. For instance, the whole civilized world, scientific and otherwise, was aroused by the discovery in 1745 by Van Kleist of what was afterwards called the Leyden jar. In 1786 the world was again excited by Galvani's discovery of what he supposed to be the cause of vitality, but which, a short time afterwards, Volta explained by what has since been known as the Voltaic pile. In 1807 Davy's great discovery of the dual nature of the alkaline earths revolutionized the ideas of scientists. All the awakenings were of great value in creating a careful study, which has resulted in the rapid development of the physical sciences.

THE VARIOUS RAYS DESCRIBED.—The Roentgen discovery of the X rays was announced in December, 1895. Immediately afterwards scientists in all countries repeated his experiments, and all sorts of hasty conclusions were published. The ignorance of just what constituted his discovery was the cause of much of the conflicting statements made by investigators. Briefly stated, a Crookes tube will produce the cathode, Lenard and Roentgen (or X) rays, all differing from each other in some particular. A Crookes tube is a glass bulb, exhausted of its air, at one end of which a wire is inserted with a small disk on the inside, known

as the cathode or negative terminal of an electric circuit, and at some other point a similar wire is inserted, known as the anode, or positive terminal. When these two terminals are connected with the terminals of an induction coil the cathode rays pass from the cathode terminal in a straight line to the opposite side of the tube, regardless of where the anode is placed. The Lenard rays start from the outside surface of the tube at the point where the Lenard rays stop, and continue in the same direction and in the same straight line, and the Roentgen, or X rays, also start from the same portion of the surface as the Lenard rays, and also travel in the same straight line. In many respects these rays are alike, but each has its peculiarities in which it differs from the others.

The cathode rays are entirely inside the tube. English scientists believe them to be streams of negatively charged particles, but whether they are particles shot off from the anode, or particles of the original gas in the tube, is not known. They would seem to be material particles, for they are deflected by a magnet.

The Lenard rays, like the cathode rays, are visible to the eye; they are faintly luminous; they can also be deflected by a magnet; they are like the X rays in that they can pass through many substances that are opaque to light, and can impress their action on a photographic plate placed behind these substances. They differ from the X rays in that the latter cannot be deflected by a magnet.

VIEWS OF PHYSICISTS.—Tesla thinks the X rays are due to material particles shot through the tube. A strong fact in favor of this theory is that the longer a tube is used the more exhausted the vacuum becomes. Professor Elihu Thomson, who has given much time to the subject, has invented a method of restoring the usefulness of an over-exhausted tube by lowering the vacuum.

The Lenard rays presumably contain electrified particles. Now, do these electrified particles pass through the glass? The general belief is that we do not know. Prof. John J. Thomson, the English physicist, says they consist of connection streams, and are produced by the air outside the tube. Prof. Lodge says

the difficulty in distinguishing the X rays from the Lenard rays is the difficulty in separating the two.

Early in the discussion the X rays were thought to be the long-looked-for longitudinal vibrations of the ether. About July last a large number of physicists had come to the conclusion that they were ordinary transverse vibrations of small wave lengths. At the present time the belief is that we cannot say what they are. Dr. Houston did not believe they are longitudinal. They may be transverse vibrations away beyond the violet of the spectrum. J. J. Thomson, in a recent able address before one of the scientific societies of England, said he thought there was no crucial experiment that would show that the X rays were a species of light, but that there is no property which the X rays possess which is not possessed by some kind of light. This is a very important statement.

HOW THEY DIFFER FROM LIGHT RAYS.—The X rays have not yet been polarized. If they are transverse vibrations it ought to be possible to polarize them. They do not suffer any sensible refraction capable of any reflection, so it seems if they are light, if they are transverse vibrations, they must be of a very different character from ordinary light.

Dr. Houston stated that thus far the great value of the discovery had been utilized principally for surgical uses. Quacks of all kinds had also made use of it for personal gain. The rays are said to be good to stimulate the growth of the hair and also to remove hair; to destroy the microbes of disease; to reveal the character of flesh, whether living or dead, and many other similar statements are made which have no foundation in fact.

Great improvements have been made in the construction of X ray tubes and the manufacture of photographic plates. A man's skeleton can now be photographed almost by a snap shot. The fluorescent screen has also been a great advance in the science, as it enables the surgeon to look through a person's body and locate foreign substances.



AMERICAN JOURNAL OF PHOTOGRAPHY.
DECEMBER, 1896



CHILD STUDY.

NEGATIVE BY
HARRY A. WEBB
1028 ARCH STREET, PHILADELPHIA

CARE OF THE EYES.

PRECAUTIONS TO BE OBSERVED TO PROTECT THE SIGHT.

THE casual remark of a doctor the other day, that affections of the eyes were on the increase, according to the *Public Ledger*, led to an investigation by a reporter, with the result that the assertion was found to be substantially correct.

Several eye specialists whom the reporter saw were unanimous in the opinion that since asphalt pavements have been laid in the city's streets there has been a large increase in inflammation of the eyes—conjunctivitis. When an ophthalmologist (as doctors who make a specialty of the eye are called) first mentioned this, the reporter thought he was putting it rather strongly, but the other doctors were of the same mind, and cited their eye dispensary reports from the hospitals with which they are connected for the past few months, and the corresponding months before the asphalt pavements were laid. There undoubtedly has been an increase, even more than would be looked for or allowed for with the growth of the population.

It is not hard to understand how this increase in inflamed eyes has come about when doctors say that the heavy wheels of drays and carts grind the top layer of the asphalt into an almost imperceptibly fine gray dust, which, when blown into the eyes by a stiff breeze, sets up an irritation of an exceedingly annoying and, sometimes, dangerous character. This, however, is easily relieved by ophthalmologists if no other complications arise.

MOON BLINDNESS.—There are many other troubles which the eye is heir to, and in late years some have increased while others have decreased. Of the more common kind not so much is heard nowadays of "moon blindness," an eye trouble of which sailors returning from the tropics complained. The jack tars used to think, and probably many of them do yet, that the difficulty they had in seeing was due to sleeping on deck in the rays of the full moon on hot summer nights in the torrid zone. It was not the moon, however, that caused the trouble, but the power-

ful rays of a Southern sun pouring down on the white sails and white decks of the vessels.

Again, some sea-going men have returned to port complaining of difficulties of sight, which they attributed to looking at passing vessels while at sea through a maze of ropes in the rigging of their own boats. Another complaint was that the sudden flash of white from a seagull's wings dazzled them and affected their eyesight.

Of course, these and many other ideas of the friends of Davy Jones are fallacies. Any one of a half-dozen causes, of which the mariner knew nothing, may have caused his own peculiar trouble. But a sailor is superstitious and will have his fancies, no matter what the eye specialist thinks of his "lights," as he calls them.

The eye, although an exceedingly delicate organ, will stand much tinkering when necessary, and now that the ophthalmologists have found it out, many troubles and defects that would have appalled the specialist who attempted to correct them a few years ago are easily remedied.

NEAR-SIGHTEDNESS AMONG SCHOOL CHILDREN.—Near-sightedness and far-sightedness are at present two of the most common eye troubles. Astigmatism is another. Near-sightedness, or myopia, is a trouble for which civilization is largely responsible, so one specialist has said. Not only this, but the malady is on the increase, especially among school children. The reporter dwelt briefly on this point with one of the specialists seen, Professor L. Webster Fox, who has been a Government expert on the eye.

"Near-sightedness," said Professor Fox, "is undoubtedly on the increase, especially among school children. This means that as generation follows generation visual defects will also multiply.

"Our children are kept at continuous work too long at one sitting; note the results, eye exhaustion and mental fatigue before the child is ready to begin his more important studies. Too long hours at study are demanded to memorize lessons, which are, as a rule, beyond the comprehension of the little ones, and something must give way. If the eyes do not break down the

health will. If the eyes give way near-sightedness develops, caused by overstraining and abuse of them during school hours. Then comes the Frankenstein—terrible as it is to the fond parent, but the only relief—wearing spectacles. The child must wear glasses so that he may continue not only to see with more ease the objects near him, but also distant objects. There is no reason why the little, circular, focusing muscle of the eye which aids in making one see objects clearly, may not become fagged out just as the larger muscles elsewhere do. Place a heavy weight on your shoulders, bear the weight all day long, and a very tired condition of the supporting muscles of the body naturally follows. It does not require much elaborate thinking to conceive what results must follow upon the prolonged abnormal use of the eyes. This focusing muscle is potent enough to disturb the physical act of seeing, and by indirect action also be a factor in producing headaches.

"My attention has been repeatedly called to the cross-lights in a school room. The light falling directly into the eyes further contracts the pupils, which are already contracted by the action of the muscle of accommodation in its efforts to give a clearer picture to the brain. This has a tendency to elongate the eye ball, and as a permanent result we have near-sightedness. Where the eyeball has an unnatural shortness this same action manifests itself by headaches, chorea, nausea, dyspepsia, and ultimately a premature breaking down of the health. The first symptom of failing sight is a hyper-secretion of tears, burning of the eyelids, loss of eyelashes, and congestion of either the eyelids or the eyeball proper."

FAR-SIGHTEDNESS. — "Well, doctor, the other extreme, far-sightedness—what of that?" queried the reporter.

"Far-sightedness, or hyperopia, is the natural condition of the human eye. Savages are far-sighted. Humboldt speaks of the exceedingly acute vision of the Indians of South America. My own examination among Indians of our own country confirms this. Professor Jaeger, of Vienna, examined the eyes of many new-born children, and found, with very few exceptions, all far-sighted.

"As long as an individual has an out-door occupation this sort of vision causes very little disturbance in the life work of the individual. But when such a person has an in-door occupation, then do many troubles arise. Among the first to show themselves are headaches, pain in or about the eyes, a tired and languid feeling. These symptoms are so well recognized by the alert family physician that the professional aid of an ophthalmic surgeon is soon invoked for adjustment of the proper glasses which relieve the abnormal strains."

RULES TO BE OBSERVED.—"Are there any rules which can be laid down for the preservation of the eyesight?"

"I can do no better, I guess, than repeat certain rules formulated some years ago in a lecture delivered before the Franklin Institute:

"Avoid sudden changes from dark to brilliant light.

"Avoid the use of stimulants and drugs which affect the nervous system.

"Avoid reading when lying down or when mentally and physically exhausted.

"When the eyes feel tired rest them by looking at objects at a long distance.

"Pay special attention to the hygiene of the body, for that which tends to promote the general health acts beneficially upon the eye.

"Up to forty years of age bathe the eyes twice daily with cold water.

"After fifty, bathe the eyes morning and evening with water so hot that you wonder how you stand it; follow this with cold water, that will make them glow with warmth.

"Old persons should avoid reading much by artificial light, be guarded as to diet, and avoid sitting up late at night.

"Do not depend on your own judgment in selecting spectacles.

"Do not give up in despair when you are informed that a cataract is developing; remember that in these days of advancing surgery it can be removed with little danger to the vision."

Other sources of eye strain, according to other specialists, are: Reading in jolting street cars and railroad trains; working with-

out rest on books and figures day in day out until the eyes break down; badly lighted counting-rooms and offices; failure to carry the head erect when walking; tight collars, corsets and shoes—which causes a damming of the blood in the vessels of the head and eyes—and many kindred sources which cause much injury to the eyes if persisted in, but “many a frown would be saved to man and many a wrinkle to woman” by having them corrected.

Worth Pasting in Your Hat.—Four presidents of the United States died in office—William Henry Harrison, Taylor, Lincoln and Garfield. John Adams lived to the greatest age—91 years—of any man who had held the office of president.

The capital of the United States has been located, at different times, at the following places: At Philadelphia from September 5, 1774, until December, 1776; at Baltimore from December 20, 1776, to March, 1777; at Philadelphia from March 4, 1777, to September, 1777; at Lancaster, Pa., from September, 27, 1777, to September 30, 1777; at York, Pa., from September 30, 1777, to July, 1778; at Philadelphia, from July 2, 1778, to June 30, 1783; at Princeton, N. J., from June 30, 1783, to November 20, 1783; at Annapolis, Md., from November, 1783, to November, 1784; at Trenton, N. J., from November, 1784, to January, 1785; at New York from January 11, 1785, to 1790, when the seat of government was changed to Philadelphia, where it remained until 1800, since which time it has been at Washington.

The Liberty Bell was made in London, and arrived in Philadelphia in August, 1752. In September it was cracked by a stroke of the clapper. The repairing was done in Philadelphia, but the work was unsatisfactory and the founders recast the bell. The bell was in Allentown while the British troops occupied Philadelphia in 1777, and upon its return to the State House it was not again rung, except on popular occasions. On July 8, 1835, the fifty-ninth anniversary of the day upon which liberty was proclaimed, while tolling during the funeral of John Marshall, the great crack in the metal was made. The bell that had been in use after the Liberty Bell had been retired from active duty was replaced in 1828. The latter was in use until 1876, when the one now in service was presented to the city by Henry Seybert. The Liberty Bell weights 2,080 pounds, and its diameter at the mouth is five feet.

THE DAGUERRETYPE IN AMERICA.

AN interesting paper by Mrs. D. T. Davis appears under above title in the current number of *McClure's Magazine*. The article is illustrated with a number of portraits of well-known people, such as J. Fennimore Cooper, Daniel Webster, John C. Calhoun, Jenny Lind, and others from carbon reproductions of the original daguerreotypes, all neatly worked up to give them a wood-cut effect.

Unfortunately the paper is of little or no intrinsic value, as it perverts history. It is like unto the play of Hamlet with the Prince of Denmark left out. Think of it! A sketch of the "Daguerreotype in America" without any mention of Philadelphia, or of the great pioneers in heliography,—Goddard, Cornelius, or the Langenheims—men who perfected the crude process of Daguerre, and made portraiture possible.

The name of one Philadelphia pioneer, Mayall, is mentioned, but not in connection with his native city, but as the best daguerreotypist in London. Well, we all know that fact. But why not mention that he was a Philadelphian, and there learned his art, in which he gained so great renown in Europe. It was here in the Quaker city that he was instructed in photo-optics by Dr. Paul B. Goddard, and in photo-chemistry by Prof. Boyé, who is still living, and who organized the first class in photo-chemicals in the world.

Why was Philadelphia ignored? Was it through ignorance, or local jealousy? When a person presumes to write upon an important topic, he should at least study up the subject somewhat before rushing into print.

As a matter of fact, the first portrait of a human being was taken in Philadelphia in November, 1839, by Robert Cornelius, and was exhibited before the American Philosophical Society, as is noted in the minutes of the Society, December 6, 1839. This identical portrait is now in possession of the writer. Further, a studio for "Daguerreotype Miniatures" was estab-

lished and was in successful operation long before either Draper or Morse claim to have made their first successful attempt.

Even Morse's view of the "old brick church" was made long after Joseph Saxton, of Philadelphia, had made his experimental exposures from the window of the United States Mint on Chestnut Street, the original of which is now in possession of the Historical Society of Pennsylvania.

These facts and many more have been repeatedly set forth upon the pages of the AMERICAN JOURNAL OF PHOTOGRAPHY and the *Journal of the Franklin Institute*.

The claims made in *McClure's Magazine* as to the priority of Morse and Draper are not warranted by the facts. It is not the wish of the present writer to detract one iota from the credit due to Morse and Draper in their researches and attempts to perfect and introduce the heliographic art in America. The claims and successful efforts of Philadelphia scientists, such as Dr. Paul Beck Goddard, who first introduced bromine as an accelerator, Boyé, who made the chemicals, and the experimentalist Robert Cornelius, who obtained the first portrait and opened the first heliographic studio in the world, are too well known and established to be passed by, even by an average magazine article.

In connection with this interesting subject, we republish the following communication to the New York *Times*, relating to the Draper-Wolcott controversy; it was made February 10th, 1883, by Prof. Charles E. West, who is still living. It settles the date claimed by Prof. Draper for his first portrait, *March 31, 1840*, at which time there had existed a public studio in Philadelphia for over two months. It may be of further interest to mention that the minutes of the American Philosophical Society, before quoted under date of March 6th, 1840, contain the following entry:

"Dr. Patterson exhibited some specimens of the heliographic art [daguerreotype] of a large size [$4\frac{1}{2} \times 6\frac{1}{2}$ —ED.] executed by Mr. Robert Cornelius of Philadelphia, and stated to the Society that Mr. Cornelius had succeeded in obtaining beautiful representations upon highly polished silver plates."

The above were portraits taken at the studio at the corner of

Eighth and Lodge Streets, Philadelphia. Further, there are yet three persons living who recollect this incident and were present and examined the portraits. In another entry a few weeks later the names of the portraits are given, one being Mr. Duponceau, president of the Society. The Wolcott episode has also been fully dwelt upon some years ago in the columns of the AMERICAN JOURNAL OF PHOTOGRAPHY.

Another interesting feature connected with Prof. West's communication is that it was given to the writer by Thos. H. McAllister, Esq., the well-known optician of New York, whose father, John McAllister, was the first person to sit for Robert Cornelius at his studio who paid for his portrait. As a matter of fact John McAllister, Esq., of 48 Chestnut Street, Philadelphia, was the first person to have his heliographic portrait taken commercially. This was in the latter part of January or early in February, 1840. This portrait until a short time ago was still in the possession of the family, but now appears to be mislaid.

Professor West, in his letter to the *New York Times*, writes as follows:

THE DAGUERRETYPE.

To the Editor of the New York Times:

In a late issue of *The Times* it was claimed that the honor of taking the first daguerrean portrait of a living person was not due to Prof. John W. Draper, but to Mr. A. S. Wolcott, of New York. As I was a resident of New York at the time Daguerre's process was brought from Paris, and was intimate with the gentlemen who were the first to try the novel process, I wish to tell what I know about it. Daguerre's discovery was reported to the world in January, 1839. The 19th of August of the same year Daguerre illustrated his process by experiments in the presence of Arago and a large company of distinguished persons. As Daguerre's pictures required an exposure of twenty minutes—too long for taking portraits—he stated that living objects could not be taken; they could not keep still long enough.

By order of the French government the secret was purchased of Daguerre and published. A pamphlet describing the process was brought to New York by a Mr. Seger, who took it to Professor Morse, of telegraph fame. Morse was quick to see that a new field of art industry would be opened. He took it to his instrument-maker,

George W. Prosch, and said: "Make the apparatus described in the pamphlet as soon as you can." In a few days it was done, and the first trial was a picture of the old Brick Church (Dr. Spring's) and the City Hall. In the foreground stood a hack and horses on the stand and the driver sleeping on his seat. This picture was a great curiosity. Prosch's shop was in the basement of the old Morse Building, No. 142 Nassau street. The camera was placed on the steps leading to the basement. This was the first daguerreotype of still life taken in this country. In was done in October, in less than a month after Seger's arrival. As Prosch did work for the institution I represented, Rutgers Female Institute, I was in his shop almost every day and saw him making the camera for Prof. Morse. I saw this first picture many times, which was a great curiosity. Besides Messrs. Morse and Prosch, I frequently met Dr. James R. Chilton, chemist, and Dr. John W. Draper, who were deeply interested in the new art. I experimented a little myself. The first thing of importance was to get a good working achromatic lens, and the second, chemicals more sensitive to the action of light than iodine. Draper succeeded in both. He had a good lens, and was successful in preparing a bromide of iodine, which greatly reduced the time for exposing the plate. The end was achieved in his taking the first portrait of the human face by Daguerre's process.

Morse afterwards tried it and took a portrait of his daughter. Prosch immediately opened a daguerreotype gallery at the corner of Broadway and Liberty street. I was the first to sit for my portrait. By means of a mirror suspended outside of a window the light of the sun was thrown directly upon my face. Of course, my eyes were closed, and the portrait was without these important features of the human face. These daguerreotypes—for I had several—I used to exhibit in my lectures till they entirely faded out. The process of gilding was not then known. About this time, or soon after, others went into the business, and among the most successful was A. S. Wolcott, who opened rooms in the granite building, No. 273, corner of Broadway and Chambers street. I immediately made his acquaintance and sat for my portrait. Several of these are still in my possession. Wolcott contrived an elliptical mirror, which he used in place of a lens, which possessed the advantage of presenting the picture in its right position and not reversed, as in case of the lens, but it had the serious disadvantage of limiting the size of the plate and representing parts which are not at all distant from the centre in a very confused manner. Still, Wolcott was successful in taking the best portraits of the city. He was not ready for work till the spring of 1840. He

described his apparatus in Prof. Mapes's *American Repository*, a short-lived journal; but in no instance can I find in that journal that he took the first portrait, nor was it claimed for any one else than Draper, for that was conceded by all those early daguerrean workers. About the year 1860 the question of priority was raised by the friends of Wolcott in the American Institute. A committee of investigation was appointed, consisting of Messrs. Mendez Cohen, Samuel D. Tillman, and Charles A. Seeley, members of the Institute, to call on Dr. Draper and learn from him what he had to say on the subject. They did so, and Dr. Draper afterwards sent them a written statement, which was published in his "Scientific Memoirs," which appeared from the press of Harper & Brothers, in 1878. The friends of Wolcott were unwilling to give a written statement. This did not satisfy the committee, and the subject was dropped. Wolcott had died in London many years before. Priority to an invention is always determined in favor of the party who is first to publish it in some newspaper or journal. That is the universal rule.

Now let us apply it. I will quote from Draper's Memoirs just referred to. He says, page 215: "This memoir contains the first published description of the process for taking daguerreotype portraits. . . . That it was possible by photogenic processes, such as the daguerreotype, to obtain likenesses from life was first announced by the author of this volume in a note to the editors of the *Philosophical* (London) *Magazine*, dated March 31st, 1840, as may be seen in that journal for June, 1840, page 535. The first portraits to which allusion is made in the following memoir were produced in 1839, almost immediately after Daguerre's discovery was known in America." In the *Edinburgh Review* for January, 1843, there is an important article on photography. In that the invention of the art of taking photographic portraits is attributed to its true source—the author of this book. It says: 'He was the first, we believe, who, under the brilliant summer sun of New York, took portraits by the daguerreotype.' " Why does the champion of Wolcott challenge the record of the past so soon after the death of Draper? Why did he not do it before? It is like digging into his grave for hidden treasure. If he can bring a well authenticated date prior to that just noted, viz., March 31, 1840, in favor of his claim, then it will be time to reverse the tables; but if not, then let the honor remain as a memorial of the great and world-renowned scientist.

CHARLES E. WEST.

Brooklyn, Saturday, February 10th, 1883.

In regard to the above claim for Prof. Draper in the *Edinburgh Review*, it is but necessary to call attention to the statement that Draper claims to have taken his first successful portrait "under the brilliant summer sun of New York." The account of Daguerre's process did not reach America in those days of limited communication until October 14th, 1839, a period of the year when the "brilliant summer sun" had long ceased to shine for the year.

JULIUS F. SACHSE.

Origin of the Organ.—The organ is the most magnificent and comprehensive of all musical instruments. While the pipes of Pan—aside from that mythical personage—indicate a very ancient use of pipes as a means of producing musical sounds, the "water organ of the ancient" furnishes to the student of organ history the first tangible clue regarding the remote evolution of the instrument. In the second century the magripha, an organ of ten pipes with a crude keyboard, is said to have existed, but accounts of this instrument are involved in much obscurity. It is averred that an organ—the gift of Constantine—was in the possession of King Pepin of France in 757; but Aldhelm, a monk, makes a mention of an organ with "gilt pipes" as far back as the year 700.

Wolsten speaks of an organ containing four hundred pipes, which was erected in the tenth century in England. This instrument was blown by "thirteen separate pairs of bellows." It also contained a large keyboard. There are drawings of that period extant, which represent the organ as an instrument having but few pipes, blown by two or three persons, and usually performed by a monk. The keys, which were played upon by hard blows of the fist, were very clumsy, and from four to six inches broad. About the end of the eleventh century semitones were introduced into the keyboard, but to all appearances its compass did not go beyond three octaves. The introduction of pedals, in 1490, by Bernhardt—giving a compass B flat to A—was another important contribution to the instrument. These were merely small pieces of wood operated by the toe of the player.—*Popular Science Monthly*.

Patience strengthens the spirit, sweetens the temper, stifles anger, extinguishes envy, subdues pride; she bridles the tongue, refrains the hand and tramples upon temptations.—*Horne*.

SNAP SHOT AT A SPOOK.

HOW AN ENGLISH ACTOR TOOK A PHOTOGRAPH BY LIGHTNING
FLASH.

BORN in England, Herbert Sparling was partially reared on "the continent," and he has played all over the world, excepting in South America and on our Pacific Coast. Some years ago, in Australia, Mr. Sparling had an adventure which was considerably out of the common order of things. He had purchased a sheep ranch and lived for two or three years on the outskirts of civilization. He was an expert amateur photographer, and while ranching he made many pictures of ranching life which afterward attracted notable attention in England.

While leading his pastoral life he often heard from his herders weird stories of a ghost which haunted a ruined church in a deserted village some miles "up the country" from his ranch. A number of the herders claimed to have seen the apparition, which was that of a woman, and several of them declared that they had heard her scream in the most unearthly fashion.

Mr. Sparling is a non-believer in spooks. In fact, he is of a rather scientific turn of mind, and is naturally skeptical about the existence of uncanny things. Mr. Sparling generally carried his "picture box," as his herders called his camera, with him, and he amused himself by "snapping" views of the country and its animals, which he found rare and interesting. While on one of these rides he was overtaken by a heavy thunder storm. Happening to be only a mile or so from the deserted village spoken of, he dug his spurs in his horse's sides and rode with all speed for its shelter. The church seemed to offer the best protection, and not remembering or caring anything about the stories of its being haunted, Mr. Sparling availed himself of it. He hitched his horse in its vestibule, and then, feeling somewhat tired, he lay down in one of its pews.

In a few moments the storm burst over the edifice with tremendous fury. The rain fell in torrents and came down in streams through a dozen apertures in the roof. It was fast

approaching evening and the sky was so darkened by storm clouds that it was almost as black as midnight in the church. Sparling mechanically loaded his pipe and struck a match to light it.

As he did so a wild laugh rang out loud and uncanny. A flash of lightning momentarily illuminated the church, and perched on the pulpit was what appeared to be a human figure.

The horse whinnied with terror, and Sparling, despite his skepticism, was far from being comfortable in his mind. Through the semi-darkness he could discern the uncouth figure waving its arms.

"Be it what it may," said the actor-ranchman-photographer, "I'll try and snap it."

His box was swinging by its strap from his shoulder. He had hardly arranged it and aimed it at the top of the pulpit when the lightning flashed long and bright. The figure was as plain as day. Sparling "pressed the button."

Again did the wild thing laugh until the church rafters re-echoed its cachinations. Then it spoke: "Flash, lightning! Hiss and sputter and thunder roar. I care naught for you. Once I feared ye. Yes, I cowered when I saw and heard ye. You robbed me of my love. Even when I was on my knees, praying for safety you struck me down and murdered my lover, but you can't hurt me. No! I defy you! Strike me if you can. You coward, to rob a poor woman of her love and her all!"

As if in response to this awful defiance, the lightning again flashed so sudden and so vivid that Sparling was not only blinded but shocked into insensibility.

How long he remained unconscious he can't tell, but he was revived by the rain falling on him. When able to regain his feet, he found that the lightning had struck the church and had nearly destroyed it.

The pulpit was a wreck, but out of its ruins he dragged the body of a half-clothed woman. She was dead, but upon her lips was a scornful smile. Mr. Sparling placed the body on his horse, and, as the storm had exhausted itself, he was able to reach his home by midnight. His herdsmen were much frightened when

they found that he was accompanied by a corpse. The body was washed and prepared for burial by one of the herders' wives, and then it was placed in a rude coffin.

One of the herders recognized it as that of a lady who had been the wife of a rancher, who, with his son, had been killed by lightning in a storm a few years before. The terrible blow had unbalanced the mind of the woman, and she had disappeared no one knew where. It was she who was the wild woman who had so frequently scared the ranchmen and confirmed them in their belief in ghosts.

The flash picture which Mr. Sparling so strangely took was afterward exhibited in London, where it excited much attention.

—*Boston Globe.*

An Apple Problem.—Once upon a time there were two old men who sat in the market early every morning and sold apples. Each one had thirty apples, and one of the old men sold two for a cent, and the other old man sold three for a cent. In that way the first old man got fifteen cents for his basket of apples, while the second man received ten cents; so that together they made twenty-five cents each day. But one day the old apple man who sold three for a cent was too sick to go to the market, and he asked his neighbor to take his apples and sell them for him. This the other old man very kindly consented to do, and when he got to the market with the two baskets of apples, he said to himself, "I will put all the apples into one basket, for it will be easier than picking them out of two baskets." So he put the sixty apples into one basket, and he said to himself: "Now, if I sell two apples for one cent, and my old friend sells three for one cent that is the same thing as selling five apples for two cents. Therefore, I will sell five for two cents." When he had sold the sixty apples he found he had only twenty-four cents, which was right; because there are twelve fives in sixty, and twice twelve are twenty-four. But if the other old man had been there, and each one had sold his apples separately, they would have received twenty-five cents. Now, how is that explained?—*St. Nicholas.*

The fairest creature on earth is woman, yet she sometimes acts awfully unfair.

COPYING.*

IN THE first place, you must have a camera and lens, and these should be chosen with regard to the class of work to be done. If money is no object, then get the best of both sorts; but, if it is, then, if the subjects to be copied are photographs or pictures where a slight falling off in definition does not matter, a good rapid rectilinear lens will answer the purpose. But, if you want to copy line work or fine dotted engravings, the definition must be of the best, and therefore the cheapest lens in the long run will be one of the newer forms which are free from astigmatism, for, if a rapid rectilinear lens be used for that purpose on a somewhat dull day, you have to use such a small top that you cannot see to focus, and therefore your focus is but guesswork, and, if a moderately large stop is used, the negative seems to show signs of vibration, the lines one way being sharp, and those at right angles being blurred. The lens also should not be of the shortest possible focus, as, when copying the same size or larger, the camera will be so close as to throw a shadow across part of the picture, though, for copying a very large picture to a very small size, it may be of advantage to have a short-focus lens, as it might save getting the subject too far from the source of light when copying in an ordinary room, or save getting too far away from the subject when the atmosphere is hazy, which might flatten the resultant negative.

A heavy camera has a great advantage over a light one, and should have the back focusing adjustment, and that saves a great amount of time in adjusting and focusing, and is easier working, as you will frequently have the camera at its full extension; but the front focusing camera can be used; but, when copying near the same size or larger, the body of the camera must be shifted each time the lens is, otherwise it is easily seen that, as there is but one point of focus, and that may give too small an image, if the lens is racked forward, the size of the image will in-

*A paper by H. C. Rapson, read at the London and Provincial Photographic Association.

crease, but definition is lost, and can be regained by sliding the camera bodily backwards. If the camera is a light one—and most of the focus ones are, I think—it will be advisable either to weight it, or have some arrangement by which it can be clamped. Mr. E. J. Wall recommends a camera fixed to a board which slides in grooves, while the board to which he fixes his picture moves all ways to enable him to centre it properly.

A cheap and convenient stand I have had made consists of a four-legged table stand, five feet six inches long, fourteen inches wide, and three feet nine inches high, at one end of which is a board, fixed by means of two irons attached to the legs of the table by thumbscrews which allow the board to be taken away when a picture of too large size has to be copied, when, by means of small wheels on those same two front legs, it is easily moved to a central position opposite a large board fixed to the wall. These boards are marked with a series of horizontal lines, and the height of the lens marked, at which diagonal lines mark the centre. By means of these lines I fix my picture square if it is a flat print, but when it is in a book central as near as it is possible to guess; but sometimes that is impossible, as when a small picture is somewhere out of the centre of a large sheet, and then it is sometimes handy to be able to shift the camera to one side or the other of the stand, so that, in my opinion, the sliding fixture is in some cases a delusion and a snare, as it is perfectly easy to see that the camera is square on the stand. It is also handy to put it out of square when copying photographs which are slightly out of rectilinearity, as the distortion may then be overcome; but, if there is much distortion, it is useless to try to rectify it. When your picture is fixed, you slide the camera into position and focus; then, with a heavy camera, no further fixing is requisite; but, of course, you want to be gentle with it in putting in the slide, which should not bite too tight in the rebates. It will be advisable to always clamp the camera if you are working near a thoroughfare where there is a lot of heavy traffic, as it is surprising what a degree of vibration there is.

Now, as to fixing the picture to the board, if it is a flat print, all that has to be done is to fix it with drawing pins at the cor-

ners, not by sticking the pins through the paper, but at the side, so as to allow the head to hold the edge of the paper. Sometimes it is convenient to just catch the smallest possible edge, and then the pin should be put in slantingly, the point away from the picture. In the case of an unmounted print—albumen especially—this is frequently necessary. It is well to have a large number of pins, as it is better to do without a cover glass if possible on account of reflections, but if you cannot keep the print flat by those means a cover glass must be resorted to; then put your black focusing cloth round the lens so as to cover all the bright metal and polished wood. This hint also applies to framed and glazed pictures. If the picture has been crumpled it will greatly improve it to iron it, face down, with an ordinary flat iron, and then leave in a somewhat damp place for an hour or so.

If the picture is in a book, I usually put two strings round as much of the book as is behind the picture and round the board, one at the top and one at the bottom, and draw them as tight as I safely can; then, if the leaves bulge unevenly, I put two thin narrow strips of tough wood under the strings, which keeps them flat, and then, if the binding holds the lower end more forward than the top, I slip two wedges down, each one side, until the picture is upright. If the book is thin and of very large surface, so as to reach beyond the sides of my board, I have four strong laths, which I use instead of the string, and with one at the back of the board and the other in front of the book, fix the two ends with strong rubber bands; in this case, as a rule, the binding is not in the way.

If the picture is on tracing or other semi-transparent paper, it will give a clearer and brighter negative if a piece of white paper is put at the back.

Now, as to exposure, it is not always advisable to take the well-meant tips which are given gratis on this point, as, if you are copying black and white, you will be told that the shorter the exposure the stronger the contrast, and, when you say that the negatives still develop soft and flat, you are told to still halve the exposure. Now, my experience is that a black and white

negative should develop with pyro and soda in from ten to fifteen minutes, according to temperature, and that, if they do not develop in that time, they will be flat through under-exposure; and also that, if they develop much quicker, they will be flat from over exposure; and it is a very difficult thing to judge by the resultant negatives whether they are under or over exposed. Therefore always time development and judge by that. I find that, with the plates I use, the maximum density, without choking the lines, is obtained in four times the time that it takes to get the whole outline just visible.

Here I should like to mention that there are degrees of black and white. Blacks may range from the pale blue-black with many rotten or half-covered places, or the faded, rusty black of old books, to the intense black of modern engravings, and white range from the faded yellow of some old books, and the yellowish cream papers, to the pure white of some of the new engravings. It is obvious that the same class of negative cannot be got from a rusty black or faded yellow as can be had from an intense black-and-white engraving. But it may surprise some that the very white-and-black print will stand more exposure than either of the others, and the rotten blue-black on cream the least of all. But it is from the fact that the intense black will take longer to reflect any appreciable quantity of light than the faded ink, while the blue-black, being a more actinic color and thin, will stand but very small degree of exposure, though, at the same time, the whites are in inverse ratio; therefore, taking exposure, the ink will stand as two to one, and the reflecting power of the whites as two to one, there will be a difference of four to one in the resultant negatives. This is an extreme case, but such can easily be found. In the case of the faded print, a clean but thin negative can be obtained, and is sufficient for some purposes, but for others must be intensified, while a rotten print will never copy well, as every thinness in the ink is exaggerated. So always expose for the longest time that the blacks will stand without developing up, and that is the point where you will get the strongest contrast; with less, the whites take so long to come up that the blacks fog; with more, the blacks will develop before

whites have gained sufficient density, and, as before mentioned, will both be flat.

In copying a photograph two or three times, the black-and-white exposure should usually be given according to the density of the photograph to be copied and the class of negative required. In extreme cases of flatness or a mere ghost of an image, the brightest effect will be obtained by exposing for the same time as for a black and white, while very hard and solarized P. O. P. prints will want four times that exposure. I should always advise correcting errors as much as possible in exposure, as it is easier and more certain, and, in case of more being required, it can be done in development without much loss of time, whereas it, at best, can only be done with great waste of time in development alone. Another reason is that, if you alter gradations in exposure, you can develop two very different negatives in the same dish, side by side, and get what you want. Do not get your negatives too dense, or your image will show all the marks of the paper copied. I find that a good time for developing photo-copy negatives is three times the time of the first appearance of the whole outline, in all, usually, six to ten minutes.

There are other methods of copying, as, when we want a negative from a negative, or lantern slides from the original negative, the only extra apparatus is for the front of the camera, and that may consist of condenser, artificial light, and holder for negative or transparency; or, for daylight, a multum-in-parvo class of apparatus, which is bulky, or a simple stand with grooved runners, which raise or lower at will by means of thumbscrews, which will hold any size from quarter-plate to 12 x 10, the intervening space being covered with a black focusing cloth; and as it is inconvenient to work with the apparatus pointing to the sky, a reflector (white paper will do) is placed at the back at an angle to throw the most light into the lens; out of doors that will be 45°, but elsewhere other considerations come in and alter the angle. For making a negative from a negative, a transparency must be made; this can be done either by contact or in the camera. From a contact transparency the negative must be

made in the camera, and from a camera-made transparency the negative may be made by contact, the best method being, perhaps, a contact carbon transparency, as the process gives a softness and range of gradation difficult to equal by any other process, besides being cheap. It is a process that no amateur need be afraid of, and certainly no professional photographer ought to practice.

I am getting frightened at the length of this short paper, so will finally conclude by saying that I have never known a negative to fog by exposure to light after it is once put in the fixing bath, though some (so it seems to me) think that the slightest gleam of light on the last atom of visible bromide of silver has fogged it. I never knew light action to show (short of days' exposure) unless developed.

Photographs by Electric Light.—William A. Eddy, of Bayonne, N. J., has discovered (what has been known for a considerable time), that photographs of houses and streets can be taken at night, owing to the present wide prevalence of electric light. The first outdoor electric light photograph taken by him was at 9.45 p.m., November 8th, 1896, and includes a faint view of the corner of Avenue D and Fourth Street Bayonne, followed by a clear view at 9.50 p.m. of the corner and trees of the grounds formerly owned by Dr. Payne.

On November 13th, 1896, twelve exposures were made at Bayonne between 11 p.m. and midnight, and on November 15th, between 8 p.m. and 1 a.m., twelve exposures were taken in New York, including Madison Square, the New York Post-office, Herald Square, Twenty-third and Broadway, and others. The photographs in New York revealed whole blocks and streets. Mr. Eddy says the discovery will be valuable to the press, by making it possible to take important photographs in time for the morning editions. Some of the Bayonne photographs are so clear that the carbon in an electric light globe is discernible, and the houses are as clear as if taken by daylight. Dr. W. H. Mitchell and G. S. Bogert, of Bayonne, were present at the New York experiments. Mr. Eddy is preparing to take mid-air kite photographs of electric lighted cities.

The Editorial Dropshutter.

The Detroit Convention.—From present indications the exhibition to be given by the Michigan Photographers' Association in connection with the annual convention of that society at the Art Museum February 2d and 3d, 1897, will surpass any previous exhibition under the auspices of this association. The Jackson photographers and citizens did their best to have the executive board select that place as the next meeting place of the association, but this was voted down at the meeting of the board at the Russell house.

The meeting was presided over by C. M. Hayes, Detroit, president of the association. C. E. Heath, Grand Rapids, vice-president; E. S. Tray, Jackson, second vice-president; J. E. Watson, Detroit, secretary, and A. G. McMichael, Detroit, treasurer, were also present.

E. S. Tray, of Jackson, second vice-president of the association, came down and presented a claim for Jackson, that was hard to overcome, but the Detroit photographers declared that they wanted the exhibition, and promised to take care of the premiums, defray other expenses and give the members a royal good time, and secured the convention.

The board spent most of the afternoon arranging the preliminary work on the prize list. The most interesting step taken by the board was in deciding to make a special feature of the amateur exhibits. To this end classes in landscapes, marines, instantaneous views, cloud effects and composition will be had for the amateurs. There will be prizes of all descriptions, for the large army of unprofessional photographers. They will include cameras, plates, chemicals, and what not.

A BIG GOLD MEDAL.—It was also decided to offer a gold medal, which will be two and a half inches in diameter, to the person exhibiting the most artistic novelty in photography. This will be open for competition to all the photographers of the world. This will be the grand prize of the exhibition. There will be an outside prize of a gold medal for the best picture in the exhibition. This will be open to all.

One of the features of the convention will be "A dissection of dry plates and the ills of printing out," which will be talked about by three representatives of dry plate manufacturers and three representatives of paper firms.

It is expected that at least one hundred and fifty members of the

profession in Michigan as well as many from outside the state will be present at this exhibition. A long list of prizes, medals and diplomas will be awarded, and the board has received assurances that a wider interest will be taken in this affair by the photographers in and out of the state than ever before.

A Unique Display.—In the great parade held in Rochester, N. Y., after the late general election, the Eighteenth Division attracted universal attention. It was not alone unique, but is the first record where the Photographic and Optical trades have been able to muster in so great a number as to warrant a special department of a public display. The roster was as follows: Citizen's Band of Batavia, 20 pieces; Eighteenth Division—Photographic and Optical trades; George Eastman, marshal; Bausch & Lomb Optical Works, Captain William Bausch commanding, 400 men; Rochester Optical Co., Captain Frank Bouton commanding, 150 men; Rochester Camera Co., Captain H. P. Carlton commanding, 130 men; Sunart Camera Co., Captain Joseph Hawley commanding, 18 men; Photo. Materials Co., 15 men; Eastman Kodak Co., Captain F. M. Elwood commanding, 490 men; Rochester Martial Band, 10 pieces; Palmyra Band, 14 pieces; F. A. Brownell Camera Co., Captain F. T. Day commanding, 380 men; Enterprise Co., Captain Frank Fosdick commanding, 50 men.

A New Studio Vignetter.—The Eddowes, a new camera negative vignetter, has been placed in the market. The advantages claimed for it are, that it fits all cameras, it can be brought nearer to the lens or removed from it, and will yield all shades of vignettes from white to black. It is attached entirely to the camera and leaves the camera free to move on the stand, and can be manipulated from the rear of the camera while the operator observes the effect on the ground glass.

The Gilbert Aristotype printing paper for photographers is meeting with such approval from the trade that E. A. Gilbert, the inventor and manufacturer, has in view the forming of a stock company for the manufacture of this paper, in which company he will have the managing interest. The present location of the plant—on Institute street—will be retained. The capital stock of the company will be \$100,000. The prospective stockholders are prominent business men of the city, and will give the added weight of business sagacity and financial support to the already successful enterprise. The shipping list includes many foreign as well as American ports.

The Camera in Alaska.—A tourist who during the past summer sojourned in Alaska, mentions the following amusing incident: "I came near precipitating an Indian outbreak by taking a camera among them. Old and young crowded around me in the greatest curiosity while I was putting the machine in order, but when I had got everything ready and swung the ominous muzzle of the thing around to take in the bulk of the crowd it was too much, and there ensued about the worst panic I ever saw. There was a stampede to a place of safety and a general outcry. The men rapidly corralled the smaller children with much forcible language, and the squaws looked out from under the sides of the tents and called to one another and to stray papposes to warn them against calamity. I found very few Indians in the interior who had the courage to face the evil eye of the camera, and it was necessary to use a good deal of diplomacy to get a characteristic view.

Photographer's Association of Michigan.—At a meeting of the Executive Board of the Photographers' Association of Michigan, it was decided to follow the example of the National Association in their last convention at Chautauqua, whereby they rented to the manufacturers and stock dealers of photographic supplies and specialties, a desk and such room as they required to bring before the notice of the photographers such articles as they desired. The convention will be held in Detroit, Feb. 2d and 3d, 1897, desks and spaces will be rented as above mentioned for \$6.50, and it is further suggested that each firm so occupying a desk would favor the convention with a five-minute talk upon any subject pertaining to the art.

Mid-Air Photographs.—An attempt was made on Thanksgiving day at Bayonne, N. J., to take mid-air photographs of the important residence district radiating from Madison Square, New York.

Extra Large Carbon Prints.—The well-known firm of Messrs. Ad. Braun & Co., of Paris and Dornach, now offer carbon prints of one, one-and-a-half and two square meters, illustrating the masterpieces of painting, sculpture and architecture, such as the Acropolis, the Forum, the Sistine Chapel ceiling, the Drapers' Syndicate, the Venus of Milo, etc., made in every case from a negative obtained directly from the original which it represents. The prices for these monster prints in either black or sepia range from 250 to 300 francs each.

Photographic Hints and Formula.

Bromo-Hydroquinone Developer for producing great contrast and intensity, also for developing over-exposed plates. Make two solutions :

No. 1.

Distilled or ice water,	25	ozs.
Sulphite of soda crystals,	3	ozs.
Hydroquinone,	$\frac{1}{2}$	oz.
Bromide of potassium,	$\frac{1}{4}$	oz.

No. 2.

Water,	25	ozs.
Carbonate of soda crystals,	6	ozs.

Mix 1 and 2, equal parts, for use.

This developer is excellent for copying pen drawings and engravings.

Metol-Hydrochinone Developer.—

No. 1.

Water,	16	oz.
Metol,	30	gr.
Hydrochinone,	30	gr.
Sodium sulphite (crystals),	240	gr.

No. 2.

Water,	10	oz.
Potassium carbonate,	120	gr.

To develop take

No. 1,	1	oz.
No. 2,	1	oz.
Water,	2	oz.

Fixing-Bath.—Plates which have been developed by means of Eikonogen should be well washed and can be advantageously fixed in an acidulated fixing bath. To obtain this, dissolve 1 part of fixing-salt in 8 parts of water; or, dissolve 5 parts of sulphite of soda (cryst.) in 100 parts of water, acidulate with 1 part of concentrated sulphuric acid, and then add 20 parts of hyposulphite of soda. This bath remains clear even after frequent usage, it hardens the gelatine, and yields negatives of a very fine printing color.

Uses of Aluminium.—It is claimed that aluminium plates are destined to become the universal material for lithographic printing, which means a revolution in the lithographic art. Of all the metals that have been tried besides aluminium, says the *Aluminium World*, to replace the cumbersome lithographic stone, zinc is the only metal which has given any satisfaction, but it was found that zinc could not be depended upon. To insure good work the zinc plates must be absolutely pure, and even then many colors cannot be printed from zinc with safety. Aluminium has been proven to be as good as stone. The metal approaches the physical properties of lithographic stone from its ability to absorb fats or slimy substances.

To Remove Brown Stains.—If the stains have been caused by dirty hands, or hypo in the toning solution, or by the print coming in contact with some metal such as the brass fittings on the print washer, these stains may be moved by a little local treatment with a solution of alum. It is best to apply the alum with a brush so as to keep it from spreading over the print. If the stains are not removed in this way the print may be immersed in the following bath: Dry chloride of lime, 2 ounces; carbonate of potash, 4 ounces; water, 40 ounces. Mix the chloride of lime with 30 ounces of water, dissolve the carbonate of potash in the remainder. Mix, boil, and filter. Wash well after the stains are removed.

To Get Soft Hands.—Fill a wash-basin half full of fine white sand and soap suds, as hot as can be borne. Wash the hands in this five minutes at a time, brushing and rubbing them in the sand. The best is flint sand, or white powered quartz sold for filterers. It may be used repeatedly by pouring the water away after each washing and by adding fresh water to keep it from blowing about. Rinse in warm lather of fine soap, and, after drying rub them with dry bran or cornmeal. Dust them, and finish with rubbing cold cream well into the skin. This removes the roughness caused by housework, and should be used every day, first removing the ink or vegetable stains with some vegetable acid. Always rub the spot with cold cream or oil after using acid on the fingers.—*Everywhere.*

To take for granted as truth all that is alleged against the fame of others is a species of credulity that men would blush at on any other subject.—*Jane Porter.*

Photographic Literature.

The American Annual of Photography and Photographic Times Almanac for 1897.—370 pages with over 250 illustrations. Scovill & Adams Company of New York, price 75 cents. Paper cover.

This standard American annual, the eleventh of the series, like its predecessors is a handy reference book for the photographer, and should be within easy reach for consultation for everyday work.

The various interesting papers are well illustrated, and cover the various photographic processes. Among the contributors are found the names of many well-known authorities at home and abroad. The present volume without doubt will have a sale equal to its immediate predecessors, which during the past few years approached the phenomenal stage. The publishers well deserve their merited success.

Photographischer Almanach für das Jahr 1897.—Ed. Liesegang's Verlag, Düsseldorf, Germany. Price 1 mark. The Liesegang annual comes to us as usual in a small, handy form. It is a 12mo of 124 pages, with several illustrations, the frontispiece being a photogravure of the late Dr. Paul Ed. Liesegang. Among the contributors are to be found some of the world's leading photo-scientists, such as Eder, Schumann, Jeserich, Jaffe, and others of similar reputation. Not the least valuable part of the Almanach are the series of recipes or formulas covering every branch of photographic manipulation.

The Magic Lantern Journal and Photographic Enlarger Almanac and Annual for 1896-97. Edited by John Hay Taylor. Magic Lantern Journal Company, Limited, 9 Carthusian Street, London, E. C.—This annual contains 166 pages, with numerous illustrations in the text. The reading matter consists of a number of original articles upon lantern subjects. In fact, every lanternist, professional or amateur, should possess a copy of this annual for ready reference. Four beautiful full-page illustrations by Mr. Edward Pickard show the capabilities of the Thornton-Pickard time and instantaneous shutter. The book may be obtained through the publishers of this journal.

X-Ray Notes.

Tesla's Electrical Oscillators.—The last issue of the *Electrical Review* describes the latest electrical invention of Nikola Tesla. He has succeeded, it says, in perfecting his so-called electrical oscillators or machines for the economical production of rapid electrical vibrations. By means of the oscillators he is confident that his lightning by glass bulbs, without the usual filament of the incandescent lamp, will become practicable.

They are, besides, capable of developing far more powerful Roentgen rays than was heretofore possible with the old apparatus, and they lend themselves to numerous other uses, such as photography, the production of ozone and other chemical combinations, and to electrotherapeutic treatment.

The Blind May See.—Thomas A. Edison, it is claimed, has verified the experiments reported to have been made in San Francisco, in which by means of a cathode ray a blind boy had been enabled to distinguish light. Edison experimented on two subjects, both blind, from Newark, N. J. Many tubes were tried, each with increased strength, and finally the subjects were able to distinguish flashes. One of the men was able after a time to say when the light was turned on and off.

The most successful results were obtained with the aid of a red globe, and it is Edison's intention to continue experimenting on this line until much more satisfactory results are arrived at, which he confidently predicts will be soon.

X-Rays in Moonlight.—Covered Plates Affected by Exposure at Night.—A German paper publishes a short article, in which the author claims to have found rays similar to the X-rays in the light of the moon. He states that when dry plates were exposed in an inclosed holder to the sun's rays no effect was obtained, but when exposed to the rays of the moon during a night they were completely blackened. Pieces of metal produced no shadows, showing that they did not absorb these rays, which, therefore, traverse materials opaque to X-rays. Masonry was the only material found which was opaque to them. When the moon was near the horizon shadows similar to those produced by X-rays were obtained; black materials near the plate, especially when they touch it, produce strong light effects. In a cm

cases the structure of the wooden case was shown on the plate. The rays seemed to pass readily through the densest bodies.

Astrological Almanacs.—For some reason, the real old-fashioned almanac, containing the signs of the zodiac as set forth by astrologers, has almost entirely disappeared in this country. What part it has occupied has now been relegated to the patent medicine fraternity.

At this day and age of civilization, it seems almost incredible that any person could believe that the position of any particular heavenly body, at the date of one's birth, could exert either a good or a bad influence over one's life; yet many now cling to the old astrological predictions of three centuries ago.

Taurus, Cancer, Virgo, Scorpio, Capricornus and Pisces were unfavorable signs and boded no good; while Aries, Gemini, Leo, Libra, Sagittarius and Aquarius were favorable signs and of good fortune. In arranging the constellations of the zodiac, the shepherd astronomers named the seasons after certain animals, as Aries and Taurus represented March and April, and Gemini the month of May; but when the sun turned toward the south, as it did on the 22d of June, then it was likened to a crab, because it went backward; and on the 20th of September, when the days and nights were of equal length, then came the sign entered Libra, or the scales. Thus every month had its sign and representation among the stars in the sky, down to Pisces, which said, "Now is the time to go fishing."

While the astrological portion of almanacs has been almost entirely eliminated, the astronomical has increased in value and importance. We have evidence that a Roman almanac was being used three centuries before Christ. In the British Museum there is an almanac in manuscript, dating back as far as 1292, said to have been made by Sir Roger Bacon. In 1457, almanacs were first printed in Germany, and in 1497 in England. Mr. W. Bradford, of Philadelphia, printed the first almanac in this country in 1687. The first copy of the celebrated almanac, called "Poor Richard's Almanac," was published in 1732, and continuously for twenty-five years. The almanac was made famous by containing predictions of all sorts; sayings of all ages; proverbs, covering a wide range of actions; and prophecies concerning the fate of men and nations.

Since 1757, almanacs have been published continuously, and many have contained much valuable information, and also with much of no value at all. At the present time the almanac published by the Tribune Association, of New York, excels all others for its yearly statistics, embracing the social, political, judicial and industrial departments of the United States.

Obituary.

Napoleon Sarony.—Napoleon Sarony, the celebrated artist and photographer, was found dead in his bed on the morning of November 8th, at his home, No. 126 West Forty-seventh street, New York. Paralysis of the brain was the cause of his death. Two years ago he sustained a paralytic stroke, and again nine months ago, but neither attack was severe.

Mr. Sarony had been in apparent good health for some time, and was in unusual good spirits up to ten o'clock the night previous, when he retired for the night. He failed to answer when called in the morning, and when his wife attempted to arouse him she found that he was dead.

Mr. Sarony was perhaps the best known portrait photographer in America, and by the profession he was also considered to be the leading lithographer of the world. He was born in Quebec in 1821. He was a Frenchman, his father being one of the Black Hussars in the Austrian army. He came to New York when he was twelve years old. He was first in business with Robertson & Co., at No. 117 Fulton street, then of the firm of Sarony & Major, and later of the firm of Sarony, Major & Knapp.

He soon amassed a fortune, and retired from business in 1858. For the next five or six years he travelled in Europe. During the war of the rebellion he lost his fortune, and at the close of the war he again started in business at No. 630 Broadway. A year later he moved to No. 680 Broadway, and later to Union Square. Last May he opened the present studio at 256 Fifth avenue.

Mr. Sarony was the first photographer to introduce background in his works and his distinctive genius was in posing and lighting. His patrons include the entire list of America's celebrities and visiting notables of the past generation. He has photographed over 150,000 persons of celebrity, from Abraham Lincoln to Jim Corbett. His work has been shown at all the academies for many years. He was a great artist in colors, his charcoal and crayon work was unsurpassed, and, what is not generally known of him, he was a leader of lithography.

Mr. Sarony leaves a widow and three grown children—Otto, Jane and Mary.

His will was filed for probate November 19th. The testator leaves his business to his son Otto, provided he agrees to carry it on for fifteen years.

The rest of the estate, the value of which is not given, is divided among the widow, Louie, the daughters Belle, Mary Fry, of London, and Jennie Fisher, of Scarboro, England. The will was executed October 2d, 1885.

Russell Smith, the veteran scenic artist, died November 8th, at his home, at Glenside, beyond Jenkintown. Although his death was somewhat sudden, there have not been lacking premonitions of his failing powers. Within a week past he painted a landscape, concerning which he remarked to his physician: "I am afraid my powers are going; it took me a whole day to do that landscape. Ordinarily I could have done it in a few hours." He was, however, almost to the last in good health for his years, and on election day went to the polls and voted for McKinley, and he was very cordial in his expressions of delight upon learning that his favorite had been elected.

He was born in Glasgow, Scotland, in 1812, and when he was but seven years of age his parents, on account of certain political views obnoxious to the Government of the Georges, moved to this state and settled in Indiana county, whence they moved to Pittsburg in 1824. His father, William Thompson Smith, established himself in the cutlery business and prosecuted it successfully for twenty years. The mother, whose maiden name was Margaret Russell, at the same time pursued the practice of a physician, having studied medicine in Glasgow.

Young Russell Smith, who was a very delicate boy, gave early evidence of the talents which later distinguished him, among his first attempts being life-sized portraits of General Jackson and Lafayette, produced with house painters' paints and an old, worn-out brush. At this time he joined a Thespian society then being organized in Pittsburg, the Thalian, and, as the members had to procure their own scenery, volunteers were welcomed, and young Russell's effective work in that direction soon gained him a monopoly in it.

The active career thus begun was spent partly in Boston, but chiefly in this city, Baltimore and Washington. He built an ample stone dwelling six miles north of this city, on the old York road, and during the twelve years he resided there he devoted himself actively to the various branches of his profession, doing a large amount of work in the way of scientific illustration of lectures, making drawings for geological surveys, and now and then following the oil branch of landscape painting. He was at this time a close student of nature, and utilized every opportunity to make sketching tours in the picturesque regions in this and other states.

In 1851 he took a journey to Europe with his wife and children, benefiting, in an artistic way, by two years' sojourn abroad. After his return he produced a panorama of Mexico and California, and a diorama of the Holy Land, some notable operatic scenery and a number of drop curtains, two of the most famous of the latter being one for Welsh's old National Theatre, in this city, and one at the Boston Museum. When the Academy of Music was built in Philadelphia—1855-56—the liberality of the directors gave Mr. Smith large scope; and for a number of years the bringing out of new operas, stock scenery, additional drop curtains, etc., gave an impetus to the higher kind of scene painting, which kept Mr. Smith busy from that time almost to the time of his death.

He painted the entire stock scenery for the American Academy of Music, in Baltimore, and drop curtains for the principal houses in this city, Boston and Brooklyn. Many of these great paintings were fifty feet square or more. These were usually executed without any assistance whatever, except that given by the color grinder, who simply ground the colors, washed the brushes and pots, and raised or lowered the frame holding the canvas. The reason that he always discarded other assistance at his work he once explained by saying: "Every single touch put upon the canvas must be done with meaning, or, rather, must convey the individuality of the artist, or otherwise the work would be no better than a house-painter's, done by a mere copyist." Only a short time ago he was able to remark: "I am proud, at this time of life, to be able to say that no theatrical manager has ever had to wait an hour beyond the appointed time for the completion of any work entrusted to me."

His famous act-drop at the Academy of Music in this city, painted in 1856, and in constant use since, is now in the landscape portion as perfect as on the day of its completion, while, if it were possible to reduce it to the size of an ordinary oil painting, it might be hung in any gallery. Many trees in his rocky glen and forest scenes were actual pictures of those that stood at the time of the building of the Pennsylvania Railroad at the Beavers' Dam, near Cresson, where Mr. Smith purchased fifty acres of land, that he might live among and study these noble features of the forest.

Mr. Smith is survived by two sisters, who live in the West. He had two children, a daughter who died some years ago, and his son, Xanthus Smith, the well-known landscape and war-scene painter, writer and authority upon art topics, whose contributions in the interests of artistic photography have frequently appeared in these columns.

In the Twilight Hour.

SAY all you think, and you'll say more than you think.—*Ex.*

THE man who has begun to live more seriously within, begins to live more simply without.—*Bishop Brooks.*

THE best teacher of duties that still lie dim to us is the practice of those we see and have at hand.—*Thomas Carlyle.*

THERE is no beautifier of complexion, or form or behavior, like the wish to scatter joy and not pain around us.—*Emerson.*

ALL virtues are sanctified or unhallowed, according to the principle which dictates them, and will be accepted or rejected accordingly.—*H. Moore.*

IT needs, therefore, in us, infinite carefulness and watchfulness as we walk ever amid other lives, lest by some word, or look, or act, or disposition, or influence of ours, we hurt them irreparably.—*J. R. Miller, D.D.*

WHAT is there that does any one more good, that gives them more encouragement, than to meet a sweet, smiling face, that is always accompanied with a pleasant word. Strive to keep a sunny face.—*Sabbath Recorder.*

MODESTY is not only an ornament, but also a guard to virtue. It is a kind of quick and delicate feeling in the soul which makes her shrink and withdraw herself from everything that has danger in it.—*T. W. Higginson.*

RESTRAINT is honorable to man, and, what is more, restraint is honorable, even in the lower animals. A butterfly is more free than a bee, but you honor the bee more, just because it is subject to certain laws which fit it for orderly functions in bee society.

MANY people are electric lights in prayer-meeting and tallow dips at home. If there to be any difference in the shining it ought to be just the other way.—*Anon.*

NOT a woman's name was signed to the petition favoring re-submission of the prohibitory amendment in Kansas. There were 22,000 men's names.—*Ex.*

YIELD to the Lord with simple heart
All that thou hast and all thou art!
Renounce all strength but strength divine,
And peace shall be forever thine!

YET unforgetten where it lies,
That seed of generous sacrifice,
Though seeming on the desert cast,
Shall rise with bloom and fruit at last.
—*Whittier.*

ENDEAVOR to be patient in bearing with the defects and infirmities of others, of what sort soever they be; for that thyself also hast many failings, which must be borne with by others.—*Thomas a Kempis.*

GOD created man in His own image, a spirit like Himself—a spirit with understanding, with will or affections, and liberty. Were human liberty taken away, men would be as incapable of virtue as stones.
—*Wesley.*

IT is no great matter to live lovingly with good-natured, humble and meek persons, but who can do so with the froward, wilful, ignorant, peevish and perverse hath true charity.

—*Thomas a Kempis.*

UNBELIEF is departure from the living God. How simple is this! As long as you trust God you are near Him. The moment you doubt Him your soul has departed into a strange country. Faith is the link between God's fulness and strength and our emptiness and weakness.

—*Dr. Saphir.*

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Reverence

